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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,089	09/19/2003	Michael A. Fetcenko	OBC-129	8443

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EXAMINER	
PIGGUSH, AARON C	
ART UNIT	**PAPER NUMBER**
2838	

DATE MAILED: 06/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/666,089	FETCENKO ET AL.	
	Examiner	Art Unit	
	Aaron Piggush	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Gollomp (US 6,424,157).

With respect to claim 1, Gollomp discloses a method of operating a nickel-metal hydride battery, comprising: providing a nickel-metal hydride battery (col 1 ln 26-30 and col 4 ln 52-57); determining the ambient temperature of said battery (col 3 ln 64 to col 4 ln 3); and setting the state of charge of said battery, said state of charge at least partially dependent upon said ambient temperature (col 7 ln 63-67, col 4 ln 27-29, S121-S133 in Fig. 1, and col 3 ln 2-8). In this case, the ambient temperature affects the quiescent voltage, which in turn affects the SOC of the battery. Furthermore, it is well known that ambient temperature will affect the SOC of every

battery wherein the battery is at least partially exposed to external sources (i.e. other heat-producing circuitry or the outside environment).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2-10, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gollomp (US 6,424,157) in view of Bito (US 2002/0003417).

With respect to claims 2 and 3, Gollomp discloses wherein the setting step comprising the steps of: if the ambient temperature is below a first temperature, then setting said state of charge to a first value (as noted by equation in S133 in Fig. 1), however, does not expressly disclose wherein if the ambient temperature is above a second temperature, said second temperature being greater than or equal to said first temperature, then setting said state of charge to a second value less than said first value. Gollomp also does not expressly disclose wherein the second temperature is equal to the first temperature.

Although, and as mentioned before, it is well known that as the temperature changes, the SOC will be affected. Specifically, as the temperature increases, the maximum possible supply voltage of the battery increases (up to a point), and therefore, the SOC of the battery will be lower since the battery voltage would be farther from the maximum possible supply voltage (or would have a greater range between a full and an empty charge). This is also true in the opposite respect wherein as the temperature decreases, the maximum possible supply voltage of the

battery decreases, and therefore, the SOC of the battery will be higher since the battery voltage would be closer to the maximum possible supply voltage (or would have a smaller range between a full and an empty charge).

Bito discloses wherein if the temperature is below a first temperature, then the state of charge is set to a first value, and if the temperature is above a second temperature, said second temperature being greater than or equal to said first temperature, then the state of charge is set to a second value less than said first value (all of which is noted in Fig. 3, wherein as the temperature increases, the state of charge decreases, and para 0012 and 0027), in order to heat the battery more quickly so that the battery's performance can be increased. Furthermore, Bito discloses wherein said second temperature is equal to said first temperature (as can also be seen by any chosen temperature on the graph in Fig. 3), in order to provide a point wherein the above actions pertaining to setting the state of charge to a higher or lower value can be effectively carried out.

It is additionally noted that the ambient temperature is used in the Gollomp reference and the battery temperature is used in the Bito reference. The combination of the references is seen as reasonable because the ambient temperature affects the battery's temperature, and the battery's temperature affects the ambient temperature, both of which affect the state of charge of the battery in the same manner.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include setting the SOC to a second value less than the first value when the ambient temperature is above a second temperature, which is equal to the first temperature, in the method of Gollomp, as did Bito, so that the battery's temperature can be raised more quickly, which

would result in an increase in battery performance, and so that the battery could be more efficiently controlled in charging/discharging while avoiding any overcharging/overdischarging resulting from an incorrect SOC calculation.

With respect to claims 4 and 5, Gollomp discloses wherein the first value of said state of charge is affected by the ambient temperature (col 7 ln 63-67 and col 4 ln 27-29) and wherein the SOC can be calculated/set with another equation (S133 in Fig. 1), however, does not expressly disclose wherein the first value of said state of charge is greater than 70%, or wherein it is between 70% and 90%.

It has been held where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to set the first value of the state of charge to be between 70% and 90%, so that the battery could be more efficiently used by giving it a correct SOC, taking into account the ambient temperature and its effects on the battery, while also keeping the range under 90% to avoid electrolysis.

Bito discloses wherein the first value of said state of charge is between 70% and 90% (seen in Fig. 3 when the battery is below approximately -5 degrees Centigrade down to approximately -35 degrees Centigrade), in order to provide a range where the battery can be heated more quickly when it is at a lower temperature, which results in a greater performance of the battery (i.e. fixing the problem of a lower potential when the battery is at a lower temperature).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the first value of the state of charge between 70% and 90% in the method of Gollomp, as did Bito, so that a more accurate SOC would be set while avoiding electrolysis and also so that the performance of the battery would be increased by heating the battery more quickly when it is at the lower temperature.

With respect to claims 6 and 7, Gollomp does not expressly disclose wherein the second value of said state of charge is less than 60%, or wherein it is between 40% and 60%.

It has been held where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to set the second value of the state of charge to be between 40% and 60%, so that the battery could be more efficiently used by giving it a correct SOC, taking into account the ambient temperature and its effects on the battery, while also keeping the range above 40% to avoid a failure due to a lack of power or damage from overdischarging.

Bito discloses wherein the second value of said state of charge is between 40% and 60% (para 0048, 0057, and 0007, and as seen in Fig. 3 when the battery is near approximately 10 degrees Centigrade), in order to provide a range where the battery can be safely charged and discharged during operation, including during regenerative braking (para 0007 and 0050), while avoiding damage from overcharging/overdischarging.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the second value of the state of charge between 40% and 60% in the method of Gollomp, as did Bito, so that a more accurate SOC would be set while avoiding battery failure

from a low state of charge and also so that the performance of the battery would be increased by setting a range where the battery could supply or receive power (i.e. regenerative braking) while avoiding damage from overcharging/overdischarging.

With respect to claims 8, 12, and 13, Gollomp discloses a method of operating a nickel-metal hydride battery, comprising: providing said nickel-metal hydride battery (col 1 ln 26-30 and col 4 ln 52-57), said battery being at an ambient temperature of a low value (col 17 ln 35-47, col 22 ln 42-47, and col 4 ln 23-29); and converting a portion of the chemical energy of said battery to thermal energy (col 4 ln 23-29 and abstract ln 11-15). Furthermore, when a chemical battery (such as Ni-MH) is connected to a circuit, which causes current to flow, some of the chemical energy of said battery is always converted to thermal energy when discharging due to the lack of an ideal system where no energy is lost to heat (i.e. current flowing through the wire or other components will generate heat).

However, Gollomp does not expressly disclose wherein said battery is at an ambient temperature of –20 degrees Centigrade, -25 degrees Centigrade, or –30 degrees Centigrade or less.

Bito discloses wherein a battery is at a temperature of –20 degrees C, -25 degrees C, and –30 degrees C or less (as seen in Fig. 3), and converting some of the battery's chemical energy to thermal energy (para 0027), in order to increase the low temperature of the battery, which results in a greater performance of the battery (i.e. fixing the problem of a lower potential when the battery is at a lower temperature).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to provide the battery at an ambient temperature of –20, -25, or -30 degrees C or less in

the method of Gollomp, as did Bito, so that the battery could be used in a wider range of environmental conditions while keeping the performance at an acceptable level by making adjustments to the battery's temperature.

With respect to claim 9, Gollomp discloses wherein said converting step decreases the charge transfer resistance of said battery (col 8 ln 50-58, col 17 ln 35-47, and col 22 ln 42-47). Additionally, it is well known that the battery's resistance will be greater at lower temperatures because the colder temperatures make diffusion more difficult, and therefore, heating the battery will increase the temperature and decrease the resistance.

With respect to claim 10, Gollomp discloses wherein said converting step comprises the step of discharging the battery (col 4 ln 23-29 and abstract ln 7-15). Also, see rejection above for claims 8 and 9, wherein it is noted that as the battery is discharged, current will flow causing an increase in the temperature of the battery.

6. Claims 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gollomp (US 6,424,157) and Bito (US 2002/0003417), as applied to the claims above, and further in view of Young (US 6,392,388).

With respect to claims 11 and 14, Gollomp and Bito disclose a discharging step, however, do not expressly disclose wherein said discharging step comprises the step of applying a short circuit across said battery for a finite period of time, or wherein that period of time is 10 seconds or less.

Young discloses wherein a discharging step is carried out by applying a short circuit across a battery for a finite period of time (col 1 ln 35-44, no. 24 in Fig. 1, and col 3 ln 49-50), in

order to heat the battery to an acceptable temperature and overcome the deficiencies of batteries operating at low temperatures (such as lacking the ability to start a vehicle engine).

It has been held where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the short for 10 seconds or less, so that the battery temperature could be increased quickly (to reach a more optimum performance temperature) while avoiding to great of a temperature increase in the battery or the circuitry, either of which could result in damage to the battery or the system itself.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply a short circuit across a battery for 10 seconds or less in the method of Gollomp, as did Young, so that the battery could reach a highly functional temperature in a shorter amount of time (without using additional expensive circuitry components) while also avoiding too high of a temperature on the battery or on the short circuit (which could cause damage to the battery or the wiring).

7. Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Young (US 6,392,388) in view of Gollomp (US 6,424,157).

With respect to claim 15, Young discloses a method of operating a nickel-cadmium or other conventional battery to apply power to a load, comprising the steps of: providing said nickel-cadmium or conventional battery (col 2 ln 29-32); applying a short circuit across the terminals of said battery for a finite period of time (col 1 ln 35-44, no. 24 in Fig. 1, and col 3 ln

49-50); after applying said short circuit, electrically coupling said battery to said load (no. 14 in Fig. 1, no. 40-52 in Fig. 2).

However, Young does not expressly disclose wherein the battery is a nickel-metal hydride battery.

Gollomp discloses a circuit for operating a nickel-metal hydride battery or a nickel-cadmium battery (col 1 ln 26-30 and col 4 ln 52-57), in order to use a rechargeable source to power a load in low ambient temperatures.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a nickel-metal hydride battery in the method of Young, as did Gollomp, so that a cheaper and more environmentally battery could be used while still having a battery that could supply high drain rates.

With respect to claim 16, Young discloses wherein said short circuit is applied while said battery is electrically disconnected from said load (no. 40-54 in Fig. 2 and col 3 ln 60 to col 4 ln 13).

With respect to claim 17, Young discloses wherein said load comprises a starting or ignition circuitry of a vehicle (no. 14 in Fig. 1 and col 2 ln 34-41).

With respect to claim 18, Young does not expressly disclose wherein said load comprises a lighting circuitry of a vehicle. Although, it was well known to one of ordinary skill in the art at the time of the invention that a vehicle battery is normally used with the starting/ignition circuitry and the vehicle lighting circuitry.

Gollomp discloses wherein the load connected to a battery comprises a lighting circuitry of a vehicle (col 16 ln 25-32 and col 1 ln 14-21), in order to have an additional source of power for the lighting and to ease the load of the alternator.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the battery to supply power to a load including lighting circuitry in the method of Young, as did Gollomp, so that the load of the alternator could be lessened by the help of a battery, which would help avoid a system failure due to lack of power, and so that the lighting circuits could be powered with the engine and the alternator turned off.

With respect to claim 19, Young discloses wherein said short circuit is applied for a finite period of time (col 1 ln 35-44, no. 24 in Fig. 1, and col 3 ln 49-50), however, does not expressly disclose wherein the amount of time is 10 seconds or less.

As noted above, it has been held where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the short for 10 seconds or less, so that the battery temperature could be increased quickly (to reach a more optimum performance temperature) while avoiding to great of a temperature increase in the battery or the circuitry, either of which could result in damage to the battery or the system itself.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply a short circuit across a battery for 10 seconds or less in the method of Young, so that the battery could reach a highly functional temperature in a shorter amount of time (without

using additional expensive circuitry components) while also avoiding too high of a temperature on the battery or on the short circuit (which could cause damage to the battery or the wiring).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Piggush whose telephone number is 571-272-5978. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AP

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SUPERVISORY PATENT EXAMINER